

## **REMARKS**

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1 and 19 have been amended in accordance with the comments provided on page 2 of the final Office Action.

Claims 1-22 are now pending in this application.

### **Request for entry of After-final Amendment and Reply:**

It is respectfully requested that this after-final Amendment and Reply be considered and entered, since it amends the claims in accordance with the comments made on page 2 of the Office Action, in order to overcome the 35 U.S.C. § 112, first paragraph rejection of the claims, thereby (at the very least) lessening the number of issues for potential appeal.

### **Rejections Under 35 U.S.C. § 112, First Paragraph:**

In the Office Action, claims 1-22 were rejected under 35 U.S.C. § 112, first paragraph, as being non-enabling, for the reasons set forth on page 2 of the Office Action. By way of this amendment and reply, claims 1 and 19 have been amended to recite the features that the Office Action states are enabled by the specification. Accordingly, the 35 U.S.C. § 112, first paragraph rejection has been overcome.

### **Rejections Under 35 U.S.C. § 103**

In the Office Action, claims 1-6, 9, 10 and 13-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,571,401 (Lewis 1) or U.S. Patent No. 6,290,911 (Lewis 2) in view of U.S. Patent Nos. 5,756,879 (Yamagishi), 4,454,007 (Pace) or 5,296,819 (Kuroiwa) or U.S. Patent No. 5,720,862 (Hamamoto et al.) or U.S. Patent No. 5,658,443 (Yamamoto et al.); and claims 7, 8, 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,571,401 (Lewis 1) or U.S. Patent No. 6,290,911 (Lewis 2) in

view of U.S. Patent Nos. 5,756,879 (Yamagishi), 4,454,007 (Pace) or 5,296,819 (Kuroiwa) or U.S. Patent No. 5,720,862 (Hamamoto et al.) or U.S. Patent No. 5,658,443 (Yamamoto et al.), and further in combination with U.S. Patent No. 6,572,826 to De Witt et al. These rejections are traversed for at least the reasons given below.

The Office Action recognizes that Lewis 1 and 2 differ from the claims in not disclosing coating a first conductive layer and then a second non-conductive polymer layer (Office Action, page 4, lines 4-5). The Office Action states that Yamagishi, Pace, and Kuroiwa disclose covering and connecting electrodes with a conductive material, and the conductive material is altered to tailor the sensors to detect different compounds (Office Action, page 4, lines 6-9). The Office Action further states that Hamamoto et al. and Yamamoto et al. both teach multilayered sensors having cover layers atop the sensing layer (Figure 1 in both references), in which the top layer allows infusion of a sample solution from the surface into the reaction layer (Office Action, page 4, lines 10-16).

The Office Action concludes that it would have been obvious to modify the Lewis patents by coating individual layers as evidenced by Yamagishi et al., Pace, Kuroiwa et al., Hamamoto et al. or Yamamoto et al., with the expectation of achieving the desired results (Office Action, page 4, lines 17-21).

Kuroiwa does not disclose a non-conductive or insulating polymer layer. Combining Lewis 1 or 2 and Kuroiwa would not satisfy all the limitations of the present claims. Moreover, there would have been no motivation to combine the Kuroiwa layer with the Lewis layer because the Kuroiwa and Lewis sensors operate by a completely different technical principle. Kuroiwa's sensor operates by measuring capacitance changes in a single polymer layer connecting the electrodes. The layer is a moisture sensitive film that changes capacitance by change in its moisture content (col. 3, lines. 32-34). In contrast, the layer of Lewis 1 and 2 operates by a change in conductivity. The Office Action's proposed modification of Lewis is not *prima facie* obvious because the modification would change the principle of operation of the Lewis sensors.

Yamagishi does not disclose a non-conductive or insulating polymer layer. In fact, Yamagishi teaches away from non-conductive polymers (col. 7, lines 28-30). Combining Lewis 1 or 2 and Yamagishi would not satisfy all the limitations of the present claims. Furthermore, Yamagishi would have discouraged the necessary modification of introducing a non-conductive or insulating polymer layer.

If the Office Action considers that it would have been obvious to combine layers between the secondary references, Yamagishi would have discouraged adding the hydrophilic Kuroiwa layer, because Yamagishi teaches away from hydrophilic surfaces contacting the polymer layer (col. 10, lines 57-67).

In Pace, which is directed to liquid analytes, the liquid analyte connects the electrodes. In this regard, Pace is totally irrelevant to the claimed invention, since no conductive layer connects the electrodes in the structure of Pace. Rather, referring to Figure 1 of Pace, Layer 1 is the substrate and Layer 5 is an insulator. That is, no conductive layer exists in the structure of Pace.

Yamamoto et al. discloses a biosensor for rapid quantification of a specific component contained in a biological sample, in which the biosensor has an electrically insulating base, an electrode system, and a reaction layer formed on the insulating base in close contact with the electrode system. Note that Yamamoto et al.'s structure is not pertinent to the claimed invention, in which a non-conductive or insulating polymer film (second layer) is coated on a conducting material (first layer). Rather, Yamamoto et al. discloses an insulating base being formed beneath a reaction layer, and not above it.

Hamamoto et al. discloses a sensor for measurement of a content of a material in liquid, in which the sensor includes a reagent layer formed on an electrode system, and in which the electrodes of the electrode system are formed on an insulating substrate. In this regard, Hamamoto et al. is similar to the teachings of Yamamoto et al., and is not especially pertinent to the claimed invention.

Accordingly, claims 1-6, 9, 10 and 13-22 are patentable over the combined teachings of the cited art of record.

With respect to claims 7, 8, 11 and 12, since De Witt et al. does not overcome the above-mentioned shortcomings of the other cited art of record, these claims are also patentable over the combined teachings of the cited art of record.

With respect to dependent claims 13 and 14 and the last step of independent claim 21, which further recite a step of post-processing the second layer of polymer film after depositing upon the first layer of conducting material, it is noted that the Office Action does not address the features in these claims in its rejection of claims 1-6, 9, 10 and 13-22. If the PTO maintains the rejection of claims 13, 14 and 22, it is respectfully requested that the PTO explicitly describe where the features of claims 13, 14 and 22 are found in the cited art of record.

In the Response to Arguments section of the final Office Action, the Office Action fails to address the ‘motivation to combine’, ‘teaching away’ and ‘changed principle of operation’ arguments provided in the previously-filed reply, which are provided hereinabove for purposes of completeness.

The additional features that were added to dependent claims 13 and 15, which were added in the previously-filed reply, were not addressed in the final Office Action, whereby such features are believed to provide an additional basis of patentability for those claims. If the rejection of claims 13 and 15 is maintained, the PTO is requested to describe where such features in those claims is found in the prior art, or otherwise withdraw the rejection of those claims. Note that page 4 line 33 to page 5, lines 3 of the specification states that a spiral sensor configuration and a start sensor configuration represent an advancement over prior art designs, and thus are not mere design choices.

## CONCLUSION

Since all of the issues raised in the Office Action have been addressed in this response, Applicants believe that the present application is now in condition for allowance, and an early indication of allowance is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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